ED 172 635   HE 011 370

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TITLE   Teaching and Learning Styles in Higher Education:
                Match or Mismatch?
PUB DATE   9 Apr 79
NOTE   33p.; Paper presented at the Annual Meeting of the
                American Educational Research Association (San
                Francisco, California, April 8-12, 1979)

ABSTRACT
                Student and faculty perceptions of teaching styles,
learning styles, and the use of various educational environments were
compared at a small, highly selective liberal arts college. Student
and faculty perceptions of the subject matter characteristics of
academic departments and students' orientations to the subject matter
of the departments were also analyzed. The theoretical framework that
was adapted for categorizing different styles of teaching was
developed by Richard Mann (1970). An adaption of the Student Learning
Style Questionnaire developed by Grasha (1972) and Riechmann and
Grasha (1974) was chosen as the basis for assessing student learning
styles. Berquist and Phillips' (1975) classification of educational
environments and Biglan's (1973) model for the classification of
academic departments were also adapted for the study. Kolb's Learning
Style Inventory was used to investigate the learning styles of
students in departments of varying subject matter orientation.
Statistical data, a descriptive summary of the findings, and a brief
bibliography are presented. (SW)

ED172635

Teaching and Learning Styles in Higher Education: Match or Mismatch?

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INTRODUCTION

The process of teaching and learning in the college and university setting is one which seems to defy convenient description. Until only recently, little commonly was done to prepare faculty for their instructional role, to help them continue to develop their pedagogical skills, and to offer constructive feedback regarding teaching effectiveness. At the same time, the relative independence college and university faculty have historically enjoyed has further restricted examination of and intervention in teaching methods, strategies, and techniques. As a result, a variety of teaching approaches have been employed. As Berquist and Phillips (1975) have pointed out, some of these approaches obviously are based on clearly defined educational philosophies, but other approaches more frequently seem to be a result of rather uncritical modeling of one's mentors or are a result of one's perception of the criteria by which senior members of the department or college define the appropriateness of specific instructional roles.

Berquist and Phillips go on to suggest that such an approach to teaching often fails to take into account two critical factors: first, the approach must be appropriate to the learning styles of students taking a particular course, and, second, the approach must be compatible with both the content of the course and the educational environment in which the course is to take place. That is, an effective program should attempt to take into account the preferred teaching style of the faculty member, the preferred learning style of students, the content emphasis of the particular course, and the nature of the educational environment in which the course is held. Each of these four factors interacts with the others to help or hinder the amount of learning that will ultimately take place.

If, as Berquist and Phillips suggest, compatibility among these four ingredients is as critical to effective education as are the skills, knowledge, and motivation of the teacher and students, it is important to attempt to understand better the differences that do exist between instructors' and learners' preferences for teaching/learning styles, approaches to teaching and learning, and subject matter characteristics and orientations. The long range goals of such an effort would be to begin to make faculty aware of these differences and to develop faculty skills in dealing with such differences - to increase the match and decrease the mismatch between instructor's and student's characteristics on these variables.

Phase I of this study was an informal attempt to describe and compare preferences and practices of the faculty and student body of a small. highly selective liberal arts college on four dimensions of teaching and learning. That is, student preference for and faculty use of a variety of teaching styles were compared, estimates of student learning style were compared, and student preference for and faculty use of various educational environments and content orientations were contrasted. The effect of selected faculty and student demographic variables was determined.

Phase II of the study was based on the findings of Phase I. The objectives of this element were: 1. to determine if subject matter characteristics differ among departments of a small liberal arts college, 2. to determine if students

enrolled in a department tend to share the subject matter orientation of that department, and 3. to determine if faculty estimates of "ideal" learning style for students in their department match the self-assessed learning style of students in that department.

Phase III, yet to be completed, has as its purpose: 1. to determine whether scholars, depending on the characteristics of their area, differ in the degree to which they are socially and professionally connected to others, in their commitment to teaching, research, and service, and in their scholarly productivity; 2. to determine if measures of student learning style and subject matter orientation can be used to predict student preference for various teaching methods, styles of educational environments, teacher types, and student class involvement; and 3. to determine the impact of subject matter orientation and student learning style on student evaluation of instruction.

THEORETICAL FRAMEWORK

Several attempts have been made to categorize different styles of teaching. The scheme developed by Richard Mann (1975) defining six different styles which are potentially effective in certain instructional settings is a particularly useful one. A summary of Mann's six styles is presented below:

1. Style I – The teacher as EXPERT. Instructors see themselves as matter experts and define their classroom role as givers of information.
2. Style II – The teacher as FORMAL AUTHORITY. Instructors make rules for their classes and expect students to follow them.
3. Style III – The teacher as SOCIALIZING AGENT. Instructors are continually on the alert for promising students who have developed an interest in their discipline and consider themselves as gatekeepers or recruiters for their field.
4. Style IV – The teacher as FACILITATOR. Instructors feel their job is to respond to the learning goals of students even when their and students' goals are quite different. They want to enable students to learn what they (students) think is worth learning.
5. Style V – The teacher as EGO IDEAL. Instructors serve as a model for students and use the energy and enthusiasm they have for their work to inspire students to find something that is as liberating and exciting.
6. Style VI – The teacher as PERSON. Instructors create an atmosphere of trust and openness in their courses and have no qualms about talking about their own feelings and experiences, even non-academic ones.

As can be seen from the above, Mann's categorizations have the advantage of reflecting varied emphases of instruction – a concern for subject matter ("expert" and "formal authority"), a focus on the student ("facilitator"), and more charismatic teacher-oriented styles directed to or for the student ("socializing agent," "ego-ideal," and "person").

Though a less evaluative taxonomy than that developed by others (Mann, 1975; Berquist and Phillips, 1975), the Student Learning Style Questionnaire developed

by Grasha (1972) and Riecmn~~ and Crasha (1974) was chosen as the basis for assessing student learnin: Six learning styles in pairs of two are isolated by Grasha and Rie~~   ~~ed on students' attitudes towar.! learning, their views of teachers and pa~   ~~ their reaction to classroom procedures. The six styles are:

1. Style I - COMPE~   ~~ude.its learn material in order to perform better than others   ~~ ~~lass - to compete for the rewards of the classroom, such as ~   ~~r the teachers' attention.
2. Style II - COLLABORAT ~~. Students feel they can learn the most by sharing ideas and talen~.. cooperating with teachers and peers, and focusing on social interact.on as well as content learning.
3. Style III - AVOIDANT. Students do not participat? with teachers and other students in the classroom; they are uninterested or overwhelmed by what goes on in classes.
4. Style IV - PARTICIPANT. Students want to learn course content and like to go to class; they take responsibility for getting the most out of class and participate with others.
5. Style V - DE~ENDENT. Students show little intellectual curiosity and learn only what is required. They look to authority figures for guidelines and want to be told what to do.
6. Style VI - INDEPENDENT. Students like to think for themselves and learn course content they feel is important.   ...

This scheme also has the advantage of reflecting varied emphases, in this case of learning rather than teaching - an orientation toward course content ("participant" or "avoidant"), an orientation toward the teacher and or peers ("collaborative" or "competitive"), and a classification based on aspirations, motives, and educational preferences ("independent" or "dependent").

Berquist and Phillips' (1975) classification of educational environments was used as the basis for examining varying approaches to classroom organization. Six environments were described:

1. TEACHER-ORIENTED - the traditional classroom setting (seats facing the front with teacher behind or beside a table or lecturn)
2. AUTOMATED - use of instructional technologies (audio-tutorial, programmed instruction, educational television, etc.)
3. INTERACTION-ORIENTED - less formal classroom arrangements (seminar setting, circular arrangement of chairs, etc.)
4. STUDENT-ORIENTED - independent work is emphasized (contract learning, laboratory or library research, etc.)
5. SHELTERED EXPERIENCE-ORIENTED - simulated experiences employed (role playing, simulations, laboratory work, etc.)
6. EXPERIENCE-ORIENTED - first hand experience is provided (internships, work-study, on-the-job experience, etc.)

The final characteristic assessed in Phase I of the study was also based on the work of Berquist and Phillips (1975). Three relatively independent categories for classifying the content orientation of instructors were used:

1. COGNITIVELY ORIENTED CONTENT. Cognitive content is usually conveyed by means of lecture, discussion, or various technological means. Cognitive acquisition is usually measured by means of objective tests.

2. SKILLS ORIENTED CONTENT. Courses are concerned with effective performance of specific tasks. Modeling, practice, and immediate feedback are used, and assessment is made by means of performance tests.

3. AFFECTIVELY ORIENTED CONTENT. Content is related to an increased understanding of and control over the subjective aspects on one's life. Personal experiences, either spontaneous or planned, are used, and evaluation is more or less subjective.

Two areas of investigation provided the framework for Phase II of this study. Each contributed significantly to this work.

Using data gathered at a large university and a small college, Anthony Biglan (1973a, 1973b) has offered an empirically derived model that has considerable potential to assist systematic research on academic departments. Using nonmetric, multidimensional scaling procedures applied to responses of faculty to questions concerning their perceptions of the relative similarity of selected academic subject matter areas, Biglan developed a model for the classification of academic departments. Three dimensions were found to be common by both university and college faculty:

1. Existence of a paradigm ("hard" versus "soft")
   a. Hard - has a clearly defined paradigm. That is, has a clearly agreed upon set of problems for study and approved methods to be used in their exploration.
   b. Soft - has yet to achieve a clearly defined paradigm or uses a less differentiated paradigm. That is, a wide variety of problems are studied and many methods are used in their exploration.
2. Concern with application ("pure" versus "applied")
   a. Pure - the treatment of content is theoretical, speculative, or abstract.
   b. Applied - application to practical problems is emphasized.
3. Involvement with living or organic objects of study ("non-life" versus "life")
   a. Non-Life - non-living or inorganic objects are studied; studies non-living things.
   b. Life - living or organic objects are studied; studies humans and other living things.

A fourth dimension was found in Biglan's more limited work at the college level:
4. Approach to liberal arts subject matter ("empirical" versus "creative")
   a. Empirical - emphasizes empirical approaches to liberal arts subject matter.
   b. Creative - emphasizes creative approaches to liberal arts subject matter.

Further, Biglan (1973b) investigated the relationship between subject matter characteristics of departments and the structure and output of university departments. Differences among departments as classified on the above dimensions were found on social connectedness (number of others with whom faculty has worked on teaching, research, and administrative or service goals and activities), com-

mitment to the various aspects of their work (preference for and actual time spent on teaching, research, and service to department, college, and community), and scholarly productivity (number of textbooks, books, plays, articles, etc. published, papers read at professional meetings, performances or exhibitions, etc.).

Analysis of student learning style was based on the work of David A. Kolb. Kolb's work both alone (1971, 1976a, 1976b) and with others (1973, 1975, 1976) resulted in the creation, validation, and publication of the Learning Style Inventory. Derived from experiential learning theory, the LSI measures an individual's relative emphasis on four learning abilities:

1. Concrete Experience (CE) - a receptive, experience-based approach to learning that relies heavily on feeling-based judgments.
2. Abstract Conceptualization (AC) - an analytical, conceptual approach to learning that relies heavily on logical thinking and rational evaluation.
3. Active Experimentation (AE) - an active, "doing" orientation to learning that relies heavily on experimentation.
4. Reflective Observation (RO) - a tentative, impartial and reflective approach to learning that relies heavily on careful observation in making decisions (Kolb, 1976).

Further, two combination scores (AC-CE and AE-RO) indicate the extent to which an individual emphasizes abstractness over concreteness and action over reflection. Moreover, when plotted on the Learning Style Type grid, these scores place the individual into one of four basic learning modes or style types. These include:

1. The Converger whose dominant learning abilities are Abstract Conceptualization (AC) and Active Experimentation (AE). This person's greatest strength lies in the practical application of ideas.
2. The Diverger who is best at Concrete Experience (CE) and Reflective Observation (RO). This person's greatest strength lies in imaginative ability.
3. The Assimilator whose dominant learning abilities are Abstract Conceptualization (AC) and Reflective Observation (RO). The ability to create theoretical models is this person's greatest strength.
4. The Accomodator who is best at Concrete Experience (CE) and Active Experimentation (AE). Carrying out plans and experiments and involving oneself in new experiences are this person's greatest strengths (Kolb, 1976).

It was the purpose of this phase of the study to extend the work of Biglan in the small liberal arts college setting and to use Kolb's LSI to investigate the learning styles of students in departments of varying subject matter orientation.

DATA SOURCE/INSTRUMENTATION

All data were gathered at a small, "highly selective" liberal arts college of strong pre-professional emphasis. Data used in Phase I of this study were collected as part of the self-study process associated with Middle States evaluation. All regular full-time faculty (approximately 100) were required to complete questionnaires which included the following:

1. An adaptation of the scheme developed by Richard Mann (1975) which asked faculty to indicate the frequency with which they employed each of six teaching styles on a five point scale ranging from 1 ("never") to 5 ("very often").

2. An adaptation of Grasha and Riechmann's (1972, 1974) Student Learning Style Questionnaire which asked faculty to estimate the frequency of six student learning styles on a five point scale ranging from 1 ("very few") to 5 ("occurs very often").

3. An estimate of the relative use of a variety of educational environments grouped following an adaptation of the Berquist and Phillips (1975) scheme (a four point scale ranging from "never" to "frequent").

Faculty were further required to submit a syllabus for each course taught from which content emphasis was determined and to furnish demographic data on academic rank and division.

Data for students were also collected through a questionnaire distributed as part of the self-study process. A random sample of students (approximately 700) completed each of the following:

1. A measure of the frequency with which they encountered each of the six teaching types described above for this faculty and an indication of their preference for each style.

2. A measure of the relative frequency of the six student learning styles on campus.

3. An estimate of the relative use of a variety of educational environments in their classes.

In each case the range of responses was the same as that for the faculty as described above. A 240 student sample also completed the full Grasha and Riechmann Student Learning Style Questionnaire.

Approximately one year later, data for Phase II were collected at this same institution. All faculty were asked to complete a questionnaire that solicited information on the structure inherent in their work (social connectedness, commitment to the various aspects of their work, and scholarly productivity), their general perception of the subject matter orientation of each of the departments on campus (a rating of one to five on each of the four dimensions described by Biglan), the "ideal" learning style of students who would be likely to do well in their department (completing the Learning Style Inventory for such a student), and background characteristics (department, rank, experience, division). Forty-one responses were received in time to be processed for this report.

All students of the college were asked to complete one of three questionnaires. Subject matter orientation was measured on two of these. The first followed the format described above for faculty (with only one set of responses), while the second used a parallel strongly agree to strongly disagree format.

The remaining one-third was asked to complete the Learning Style Inventory. Further, a more comprehensive instrument had previously been completed by students who had enrolled in an Education class at this college. This instrument asked students to indicate their preference for teaching methods, educational environments, and teaching types and required them to complete the LSI and another learning style questionnaire developed by Grasha and Riechmann (1972, 1974). These data were used as a fourth sample, but were not combined with any of the other three data sets. Approximately 210 questionnaires of each type were returned along with the background information included with each (major/intended major, class, sex, plans upon graduation, and division).

METHODS AND PROCEDURES

The original design for Phase I of this study called for the testing of seventeen null hypotheses treating differences in faculty and student scores on each variable, preferences versus practices on two measures, and the impact of rank, division, sex, and class on three variables. Initial testing through the use of analysis of variance, however, indicated that further analysis of these data would be fruitless. That is because data were gathered to suit the needs of the college self-study and were not directly under control of the experimenter and because important sources of difference were masked by the lack of precision in instrumentation and data collection procedures, it became obvious that detailed analysis of these data would be less than productive.

It was therefore decided to move to Phase II of the study. Since differences observed in the earlier work seemed to be due more to the department and/or division of the respondents than to preferences of individuals, it was necessary to locate an instrument which measured subject matter characteristics or orientation by department/division. The Biglan scheme described above was chosen for the purpose. Further, since the Grasha and Riechmann Student Learning Style Questionnaire measured personal rather than departmental characteristics, it was replaced by an instrument designed to measure the latter, the Kolb Learning Style Inventory. These refinements made it possible to search for meaningful relationships among variables.

Ten hypotheses in null form were tested as part of Phase II of the study. Two dealt with subject matter characteristics and learning style as estimated by faculty. A second set of two was concerned with student assessment of subject matter orientation and learning style. Comparisons of faculty and student subject matter orientation and learning style were made through tests of two other hypotheses. The final four hypotheses, dealing with faculty structure, were tested in only a most preliminary manner for this report.

One way analysis of variance was used to test the eight hypotheses above that evaluate separate faculty or student samples. T tests were used to compare faculty and student samples on similar measures. A significance level of .05 was used for each of these tests.

RESULTS

PHASE I

Although this element of the study only served as a type of pilot study to clarify variables for Phase II, some observations drawn from this phase are briefly summarized below.

Styles of Teaching

Tables 1 and 2 present weighted means and percentages of response for faculty and students. Differences were observed between total student and faculty data on both preferred and experienced styles of teaching. Only slight differences were observed in student data when grouped by sex and class, and no consistent patterns of difference were found. Finally, differences in faculty responses when grouped by rank and division were noted. Thus led to the interest in more clearly investigating the role of department and division in the setting or encouraging of a certain teaching style.

Learning Style

Faculty and student means for student learning style are presented in Tables 3 and 4. While minor differences were observed, the nature of the instrument and how it was used limited more detailed analysis. An instrument more responsive to styles of identified groups of students was required.

Styles of Educational Environments

Faculty and student means for the relative frequency and importance of the use of various educational environments are presented in Table 5. Again, although differences were observed between faculty and student means on both frequency and importance of these environments/teaching methods, the source of the differences remained unclear. Analysis by department or division seemed required.

PHASE II

Subject Matter Characteristics and Orientation

Faculty perceptions of the subject matter characteristics of various academic departments were strikingly consistent. In only twenty-one of 432 possible analyses (twenty-seven departments X four dimensions X four independent variables - department, rank, experience, and division) were significant differences found. The non-life versus life dimension seemed to lead to the most disagreement among faculty as ten (of 108 possible) of the twenty-one differences were found on this dimension. The hard versus soft dimension contributed an additional eight of the differences. Only one department, Psychology (considered a natural science at

this college), presented problems for faculty as four of the twenty-one significant differences were isolated for this department (three on the hard-soft dimension).

The means and standard deviations for the subject matter characteristics of each department as perceived by faculty are presented in Table 6. The means ranked in order on each dimension are presented in Table 7, while Table 8 depicts means for each of three divisions (Fine Arts and Humanities, Social Sciences, and Natural Sciences). Finally, Table 9 presents a graphic summary of the subject matter characteristics of various academic departments on the four dimensions.

Student descriptions of their subject matter orientation were equally revealing. Significant differences were found on all four dimensions for both samples for four of the five of the independent variables (major, class, plans upon graduation, and division). Only the sex of the student did not have an effect on a dimension of subject matter orientation. These differences are summarized in Table 10. Tables 11 to 14 present summaries of student data parallel to those given for faculty data.

Comparisons of faculty perceptions of subject matter characteristics of academic departments to student subject matter orientation in those departments are presented in summary form in Tables 15 and 16. Although small sample sizes for many departments presented a serious limitation for some of these comparisons, significant differences were nonetheless found. It is noted that most of these were for departments in Division III, the natural sciences.

Student Learning Style

When faculty were asked to describe the "ideal" learning style of a student likely to do well in their department, virtually no significant differences were found on any of the six scales of the Learning Style Inventory. That is, the breakdown of each of the six learning abilities by department, academic rank, years of experience, or division produced only one significant alpha. This occurred on the Concrete Experimentation score where faculty in Division I preferred this type of learner when compared to faculty in Division III. Because sample size for individual departments was small, a summary of faculty ratings on the Learning Style Inventory is presented by division in Table 17.

Student scores on the Learning Style Inventory more clearly depicted the differences among students on the six learning abilities. The random sample (Sample 3) reporting personal LSI scores showed significant differences on eight of the 30 possible tests (the six scales by department, sex, plans, class, and division). Eight other tests approached the .05 level. The biased sample (Sample 4 - students enrolled in an Education class) was less differentiated. Again, because sample size for some departments was small, a summary of these scores is also presented in Table 17 by division.

When faculty "ideal" scores and students' personal scores on the LSI were compared by division, a number of significant differences were found. These differences are summarized in Table 18.

Faculty Structure

While it was not possible at this time to report the effect of subject matter orientation of departments on faculty structure (social connectedness, scholarly productivity, and commitment to various academic tasks, it was possible to evaluate the effect of department, academic rank, years of experience, and division on these structures. Significant differences found on these tests are reported in Table 19.

DISCUSSION

Subject Matter Characteristics and Orientation

As was indicated above, faculty tended to have a very clear perception of the differences among academic departments on the four dimensions described by Biglan. Further, although not reported above because of small sample size in some departments, faculty in a department tended to describe their own department in much the same way as their colleagues on the four dimensions. Faculty perceptions of subject matter characteristics are, therefore, both clear and consistent.

Student orientation, on the other hand, tended to be less precisely defined by the department of their major. Although student scores on the four dimensions tended to follow the pattern described by the faculty (this is especially true for Divisions II and III; the small sample size for departments in Division I weakened this comparison), the range of their scores was smaller and, at the same time, seemed to be less discriminating. Figures 1 and 2 graphically summarize this pattern and concern.

As is shown on these figures, students fairly consistently are "softer" and, more "applied," "life," and "creatively" oriented than faculty describe programs in these departments to be. Again, this is especially so for Division III and, to a lesser degree, for Division II. It should be remembered, however, that differences at the specified alpha level were found for students on these dimensions by major, class, plans, and division. Therefore, it would seem that students are, in fact, fairly discriminating on these dimensions.

A problem nonetheless remains. Student subject matter orientation at many times differs significantly from the subject matter characteristics of the department of their major. Since it is unlikely that faculty in these departments will (or should) change, it seems important to counsel and direct students more clearly and effectively toward fields where the match is more precise. It is possible that the current mismatch is a source of the frustration some students feel in their academic work; it is perhaps an explanation for the lack of success some students experience. It is perhaps an unfortunate by-product of the movement toward financial explanations and justifications of "successful" life.

Student Learning Style

When asked to describe the "ideal" learning style of students in their department, faculty in all departments (and academic ranks, years of experience, and division) with only one small exception described the same learning style. While they clearly and consistently recognized the differences among departments, they did not perceive any differences in the type of learner who would do well in a particular course of study.

Students, though, more clearly perceived such differences. This was particularly true regarding Concrete Experience and Abstract Conceptualization and their AC-CE combination score. Differences at or approaching the specified alpha level were found on eleven of sixteen possible tests on these scores. Students clearly seem to prefer more of a balance between the experience-based approach to learning and the analytical, conceptual approach than do their instructors. Figure 3 graphically presents these differences.

Again as it is unlikely that departments will radically change in their perception of "ideal" learning type, it would seem that informing students of their learning style and directing them to fields where such a style is frequently characteristic is called for. Kolb's Learning Style Type Grid, as shown in Figure 4, is one way to do this. Although LSI test results are only an approximation, the students might use the Inventory to determine how they compare to others pursuing a particular major (results are shown for the college sample surveyed as part of this study).

Faculty Structure

Results reported here only begin to describe this concern. Few background variables (department, academic rank, years of experience, and division) seem to predict either social and professional connectedness or commitment to academic tasks. Only for scholarly productivity did they begin to have predictive value. The forthcoming analysis of each by Biglan's four dimensions will hopefully be illuminating.

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Table 1. Styles of Teaching: Weighted Means for Total Faculty, Students-
Experienced Students-Preference, Faculty by Rank and Division

TEACHING STYLE	Total Faculty	Students-Preferred	Students-Experienced	Professor	Associate Professor	Assistant Professor	Instructor	Fine Arts	Social Sciences	Humanities	Natural Sciences
EXPERT	3.38	3.06	3.66	3.38	3.45	3.28	3.60	2.86	3.53	3.12	3.53
FORMAL AUTHORITY	3.40	2.35	3.21	3.59	3.46	3.15	3.40	2.86	3.50	3.27	3.50
SOCIALIZING AGENT	2.95	2.81	2.77	3.22	2.93	2.71	3.0	2.36	3.27	2.50	3.11
FACILITATOR	2.56	3.36	2.68	2.47	2.20	3.00	2.40	2.43	2.59	2.77	2.42
LGO IDEAL	3.44	3.29	3.03	3.42	3.34	3.48	3.80	2.86	3.52	3.69	3.31
PERSON	3.16	3.56	2.73	3.27	2.81	3.27	3.80	3.43	3.27	3.35	2.86

Table 2. Styles of Teaching: Percentage of Responses in Two Highest Cat gories
for Total Faculty, Students-Experienced, Students-Preference, Faculty
by Rank and Division

TEACHING STYLE	Total Faculty	Students-Preferred	Students-Experienced	Professor	Associate Professor	Assistant Professor	Instructor	Fine Arts	Social Sciences	Humanities	Natural Sciences
EXPERT	42.0	34.7	61.1	44.1	45.2	31.3	40.0	28.6	47.0	20.0	50.0
FORMAL AUTHORITY	47.6	19.6	42.1	55.9	46.7	54.1	20.0	0.0	55.9	46.2	50.0
SOCIALIZING AGENT	29.7	20.3	21.9	40.7	30.0	20.5	20.0	0.0	39.4	19.2	34.3
FACILITATOR	19.4	45.5	21.4	17.6	10.0	29.5	20.0	14.3	20.6	24.4	19.5
EGO IDEAL	49.0	39.7	21.4	45.4	48.2	51.5	60.0	14.3	54.8	61.6	41.7
PERSON	33.0	52.3	24.9	45.4	16.1	33.4	60.0	28.6	39.4	34.6	27.7

Table 3. Student Learning Style. Weighted Means for Total Faculty and Faculty by Rank and Division.

LEARNING STYLE	Total Faculty	Professor	Associate	Assistant	Instructor	Fine Arts	Social Science	Humanities	Natural Science
COMPETITIVE	3.20	2.94	3.35	3.47	2.20	2.43	3.23	3.42	3.17
COLLABORATIVE	2.46	2.55	2.65	2.24	2.20	2.43	2.46	2.35	2.54
AVOIDANT	2.13	2.29	1.87	2.21	2.20	2.00	2.20	2.36	1.95
PARTICIPANT	3.43	3.59	3.38	3.32	3.40	3.14	3.54	3.23	3.51
DEPENDENT	3.10	2.85	3.00	3.41	3.20	3.57	3.14	3.19	2.89
INDEPENDENT	2.65	2.91	2.66	2.41	2.40	2.71	2.74	2.35	2.76

Table 4. Student Learning Style: Weighted Means for Total Students and Students by Sex and Class.

LEARNING STYLE	Total Students	Male	Female	'77	'78	'79	'80
COMPETITIVE	3.67	3.65	3.69	3.87	3.88	3.75	3.34
COLLABORATIVE	2.75	2.76	2.74	2.61	2.76	2.78	2.80
AVOIDANT	2.21	2.19	2.26	2.32	2.24	2.10	2.23
PARTICIPANT	3.50	3.50	3.51	3.40	3.39	3.54	3.60
DEPENDENT	2.90	2.98	2.76	3.05	2.93	2.82	2.88
INDEPENDENT	3.08	3.11	3.03	3.05	3.08	3.02	3.16

Table 5. Styles of Educational Environments: Weighted Means for Total Faculty and Total Students on Relative Frequency and Relative Importance.

Educational Environment	Method, Strategy, and/or Technique	Faculty Frequency	Student Frequency	Faculty Importance	Student Importance
Teacher-Oriented	Lecture	3.61	3.79	3.65	3.31
	Recitation	2.28	2.27	2.30	2.16
	Questioning & Drill	2.51	2.31	2.52	2.56
	Audio-Visual presentation	2.17	2.41	2.03	2.68
	Examinations	2.61	3.65	3.17	3.07
Sheltered Experience Oriented	Laboratory work	1.75	2.98	1.72	3.10
	Simulations	1.25	2.05	1.28	2.65
Interaction-Oriented	Discussion	3.29	3.13	3.32	3.59
	Group/Committee work	1.51	2.01	1.57	2.60
	Panels, Debates, Symposia	1.31	1.63	1.38	2.51
	Teacher Conference, Office help	2.95	2.90	3.02	3.50
Automated	Computer-assisted	1.09	1.99	1.10	2.28
	Programmed materials	1.14	1.60	1.15	1.97
	Educational Television	1.05	1.33	1.07	2.04
	Audio-Visual (student operated)	1.23	1.59	1.26	2.28
	Learning packages	1.06	1.32	1.07	1.94
Student-Oriented	Independent Study	2.10	1.80	2.13	2.99
	Keller Plan	1.02	1.23	1.03	1.93
	Individualized Instruction	1.42	1.61	1.44	2.73
Experience-Oriented	Field Trips	1.40	2.06	1.65	2.99
	Internships	1.10	1.64	1.18	3.25
Self-Instructional	Preparation for exams	2.82	3.84	3.10	3.74
	Textbook Assignments	3.61	3.84	3.59	3.64
	Library research	2.58	3.32	2.92	3.45
	Laboratory reports	1.52	2.70	1.54	2.85
	Problem solving	2.19	2.95	2.23	3.15
	Computer problem solving	1.21	2.10	1.22	2.37
	Study with other students	2.21	2.79	2.35	3.01

TABLE 6. MEANS AND STANDARD DEVIATIONS OF FACULTY PERCEPTIONS OF SUBJECT MATTER CHARACTERISTICS OF ACADEMIC DEPARTMENTS.

DEPARTMENT	HARD–SOFT		PURE–APPLIED		NON–LIFE–LIFE		EMPIRICAL–CREATIVE		N
	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	
AMERICAN STUDIES (AMS)	4.053	1.138	2.895	1.034	3.973	.817	2.947	1.012	38
ANTHROPOLOGY (ANT)	2.667	.927	2.872	.951	4.462	.854	2.590	.993	39
ART/ART HISTORY (ART)	4.457	.817	2.735	1.287	2.800	1.051	4.629	.731	35
BIOLOGY (BIO)	1.500	.647	2.553	.950	4.730	.508	1.649	.949	38
BUSINESS (BUS)	2.162	1.014	4.432	.867	2.892	1.242	1.838	.764	37
CHEMISTRY (CHM)	1.054	.229	2.243	.895	2.081	.829	1.595	.762	37
CLASSICS (CLS)	3.944	1.068	1.861	1.073	3.028	1.183	3.861	.931	36
DRAMA (DRM)	4.243	.925	3.270	1.146	4.054	1.129	4.487	.804	37
ECONOMICS (ECO)	2.053	.769	3.316	.962	2.816	1.136	1.947	.769	38
EDUCATION (EDU)	3.711	1.037	4.162	.704	4.263	.828	2.974	1.052	38
ENGLISH (ENG)	3.842	1.103	2.474	1.180	3.297	1.244	4.026	.716	38
EUROPEAN STUDIES (EUR)	3.889	.950	2.389	.964	3.556	1.050	3.194	.980	37
FRENCH (FRN)	3.579	1.177	3.105	1.085	3.263	1.083	3.342	.909	38
GEOLOGY (GEO)	1.389	.549	2.972	1.082	2.111	.959	1.806	.749	36
GERMAN (GER)	3.556	1.081	3.028	1.000	3.222	1.098	3.306	.889	36
GOVERNMENT (GOV)	3.027	.833	3.216	.821	3.595	1.013	2.595	.798	37
HISTORY (HIS)	3.297	1.102	2.378	1.010	3.730	.932	2.892	.809	37
HIST. & PHIL. OF SCIENCE (HPS)	3.257	1.121	2.171	1.098	3.171	1.248	3.057	.938	35
MATH & ASTRONOMY (MAT)	1.108	.315	2.297	1.151	1.595	.896	2.324	1.082	37
MUSIC (MUS)	3.790	1.166	2.658	1.169	2.526	1.180	4.211	.843	38
PHILOSOPHY (PHI)	2.946	1.224	1.703	.878	2.865	1.159	3.333	1.042	37
PHYSICS (PHY)	1.081	.277	2.405	1.040	1.622	.861	1.730	.805	37
PSYCHOLOGY (PSY)	2.447	1.083	2.816	.982	3.816	1.270	2.000	.838	38
RELIGIOUS STUDIES (RST)	4.270	.805	2.108	1.022	3.946	1.104	3.676	1.082	37
RUSSIAN (RUS)	3.622	1.163	2.946	1.026	3.243	1.091	3.000	.972	37
SOCIOLOGY (SOC)	3.487	.942	3.180	.885	4.051	.887	2.487	.823	39
SPANISH (SPN)	3.421	1.030	2.868	.935	3.105	.894	3.026	.778	38

TABLE 7. FACULTY PERCEPTIONS OF SUBJECT MATTER CHARACTERISTICS RANKED IN ORDER ON FOUR DIMENSIONS.

HARD — SOFT DEPARTMENT	$\overline{X}$	PURE — APPLIED DEPARTMENT	$\overline{X}$	NON-LIFE — LIFE DEPARTMENT	$\overline{X}$	EMPIRICAL — CREATIVE DEPARTMENT	$\overline{X}$
CHM	1.054	PHI	1.703	MAT	1.595	CHM	1.595
PHY	1.081	CLS	1.861	PHY	1.622	BIO	1.649
MAT	1.108	RST	2.108	CHM	2.081	PHY	1.730
GEO	1.389	HPS	2.171	GEO	2.111	GEO	1.806
BIO	1.500	CHM	2.243	MUS	2.526	BUS	1.838
ECO	2.053	MAT	2.297	ART	2.800	ECO	1.947
BUS	2.162	HIS	2.379	ECO	2.816	PSY	2.000
PSY	2.447	EUR	2.389	PHI	2.865	MAT	2.324
ANT	2.667	PHY	2.405	BUS	2.892	SOC	2.487
PHI	2.946	ENG	2.474	CLS	3.028	ANT	2.590
GOV	3.027	BIO	2.553	SPN	3.105	GOV	2.595
HPS	3.257	MUS	2.658	HPS	3.171	HIS	2.892
HIS	3.297	ART	2.735	GER	3.222	AMS	2.947
SPN	3.421	PSY	2.816	RUS	3.243	EDU	2.974
SOC	3.487	SPN	2.868	FRN	3.263	RUS	3.000
GER	3.556	ANT	2.872	ENG	3.316	SPN	3.026
FRN	3.579	AMS	2.895	EUR	3.556	HPS	3.057
RUS	3.622	RUS	2.946	GOV	3.595	EUR	3.194
EDU	3.711	GEO	2.972	HIS	3.730	GER	3.306
MUS	3.790	GER	3.028	PSY	3.816	PHI	3.333
ENG	3.842	FRN	3.105	RST	3.946	FRN	3.342
EUR	3.339	SOC	3.180	AMS	3.973	RST	3.676
CLS	3.944	GOV	3.216	SOC	4.051	CLS	3.861
AMS	4.053	DRM	3.270	DRM	4.054	ENG	4.026
DRM	4.243	ECO	3.316	EDU	4.263	MUS	4.211
RST	4.270	EDU	4.132	ANT	4.462	DRM	4.487
ART	4.457	BUS	4.432	BIO	4.730	ART	4.629

TABLE 8. FACULTY PERCEPTIONS OF SUBJECT MATTER CHARACTERISTICS OF ACADEMIC DEPARTMENTS BY DIVISION

	HARD - SOFT $\overline{X}$	PURE - APPLIED $\overline{X}$	NON-LIFE - LIFE	EMPIRICAL - CREATIVE $\overline{X}$	N
DIVISION I	3.874	2.599	3.246	3.672	38
DIVISION II	3.080	3.183	3.672	2.589	38
DIVISION III	1.435	2.547	2.676	1.850	38

TABLE 9. CLUSTERING OF ACADEMIC DEPARTMENTS ON FOUR DIMENSIONS

		NON - LIFE				LIFE			
		HARD		SOFT		HARD		SOFT	
		Empirical	Creative	Empirical	Creative	Empirical	Creative	Empirical	Creative
PURE		CHM GEO MAT PHY	PHI		ART MUS	ANT BIO PSY		AMS HIS	CLS ENG EUR HPS RST RUS SPN
APPLIED		BUS ECO						EDU GOV SOC	DRM FRN GER

TABLE 10   THE EFFECT OF STUDENT MAJOR, CLASS, SEX, PLANS UPON GRADUATION AND SEX ON FOUR
DIMENSIONS OF STUDENT SUBJECT MATTER ORIENTATION - A SUMMARY OF SIGNIFICANT
DIFFERENCES.

	HARD - SOFT	PURE - APPLIED	NON-LIFE - LIFE	EMPIRICAL-CREATIVE
MAJOR				
SAMPLE 1	.005	.05	.001	.025
SAMPLE 2	.025	.025	.001	.025
CLASS				
SAMPLE 1	.05	--	--	--
SAMPLE 2	--	--	.05	--
SEX				
SAMPLE 1	--	--	--	--
SAMPLE 2	--	--	--	--
PLANS				
SAMPLE 1	--	.05	.05	--
SAMPLE 2	--	--	.05	--
DIVISION				
SAMPLE 1	--	--	.05	.025
SAMPLE 2	.025	.001	--	.05

TABLE 11 MEANS AND STANDARD DEVIATIONS OF STUDENT SUBJECT MATTER ORIENTATION BY MAJOR, SAMPLE 1.

DEPARTMENT	HARD – SOFT		PURE – APPLIED		NON-LIFE – LIFE		EMPIRICAL – CREATIVE	
	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
AMS	4.667	.577	2.667	1.528	5.000	.000	5.000	.000
ANT	4.000	1.000	2.200	.837	4.800	.447	3.400	1.140
BIO	3.516	1.262	3.667	1.301	4.807	.402	3.387	1.358
BUS	2.705	1.212	4.044	1.065	3.378	1.212	3.200	1.256
CHM	3.556	1.014	3.333	1.000	3.889	1.054	3.000	1.323
CLS	4.000	.000	3.000	.000	5.000	.000	5.000	.000
DRM	4.000	.000	2.500	2.121	3.500	.717	4.000	.000
ECO	3.800	1.304	3.400	1.817	4.200	.837	3.600	1.673
ENG	3.444	1.333	3.222	1.481	3.333	1.118	4.556	.727
FRN	3.000	.000	3.000	.000	5.000	.000	2.000	.000
GEO	4.000	1.225	3.200	1.643	2.800	1.095	3.200	.837
GOV	4.095	.944	3.191	1.078	3.619	1.203	2.810	1.078
HIS	4.286	.756	2.714	1.496	4.286	.951	3.286	1.496
MAT	3.500	1.049	3.833	1.472	3.333	1.033	2.500	.548
PHY	3.333	1.581	3.444	1.130	2.333	1.000	3.667	1.225
PSY	3.875	1.025	3.125	1.544	4.875	.342	2.750	1.291
SOC	4.400	.894	2.600	1.140	5.000	.000	3.800	1.095
UNKNOWN	3.000	1.483	1.375	4.273	4.273	.905	3.455	1.128
OTHER	3.500	.717	2.500	.707	5.000	.000	4.000	.000

TABLE 12 MEANS AND STANDARD DEVIATIONS OF STUDENT SUBJECT MATTER ORIENTATION BY MAJOR, SAMPLE 2.

DEPARTMENT	HARD – SOFT		PURE – APPLIED		NON-LIFE – LIFE		EMPIRICAL – CREATIVE		N
	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	
AMS	4.000	.866	4.167	.764	4.500	.500	3.833	.764	3
ANT	3.500	1.000	3.083	.917	3.583	1.114	2.833	.817	6
ART	3.500	1.173	3.200	1.525	3.000	1.173	4.200	.447	5
BIO	3.029	.848	3.700	.584	4.071	.544	3.186	.708	35
BUS	2.863	.884	3.663	.916	3.163	.820	3.150	.886	40
CHM	2.750	.758	3.250	1.037	3.250	.274	3.571	.672	7
CLS	3.000	.707	3.750	1.061	2.750	.354	4.000	.000	2
DRM	4.000	.000	3.000	.000	3.000	.000	4.000	.000	1
ECO	3.125	1.126	2.813	1.100	3.125	1.157	2.750	.964	8
EDU	4.000	.000	2.000	.000	4.500	.000	4.000	.000	1
ENG	3.961	.946	2.731	.927	3.692	1.032	4.000	.677	13
FRN	4.500	.000	2.000	.000	5.000	.000	4.000	.000	1
GEO	3.857	.945	3.643	.627	2.500	.866	3.643	.627	7
GER	4.000	.000	4.000	.000	4.000	.000	4.000	.000	1
GOV	3.538	.761	3.135	.933	3.808	.708	3.462	.786	26
HIS	3.500	.866	3.667	.764	3.500	1.000	3.667	.763	3
MAT	3.500	.707	3.500	.913	3.250	.646	3.500	.913	4
PHI	2.000	.000	3.000	.000	4.500	.000	3.500	.000	1
PHY	3.250	.845	3.563	.563	2.875	.991	3.375	.916	8
PSY	3.462	.558	3.654	.899	4.269	.599	3.462	.558	13
RST	3.833	.764	2.667	1.258	3.667	.764	3.000	.500	3
RUS	4.000	.000	2.750	.354	3.250	.354	3.250	.354	2
SOC	3.333	1.607	3.833	.764	4.167	.577	3.833	.289	3
SPN	4.000	.000	2.000	.000	4.000	.000	4.000	.000	1
UNKNOWN	3.750	.500	2.500	.707	3.500	.408	3.250	.289	4
OTHER	3.100	.862	3.200	.908	4.100	.742	3.400	.822	5

TABLE 13 SUBJECT MATTER ORIENTATION OF STUDENTS BY MAJOR RANKED IN ORDER ON FOUR DIMENSIONS, SAMPLES 1 AND 2 (DEPARTMENT INCLUDED IF N ≥ 5).

HARD – SOFT		PURE – APPLIED		NON-LIFE – LIFE		EMPIRICAL – CREATIVE	
DEPARTMENT	$\overline{X}$	DEPARTMENT	$\overline{X}$	DEPARTMENT	$\overline{X}$	DEPARTMENT	$\overline{X}$
BUS	2.780	ANT	2.682	PHY	2.588	SOC	1.750
CHM	3.233	ENG	2.932	GEO	2.625	PHY	2.824
BIO	3.258	HIS	3.000	ART	3.000	BUS	3.271
PHY	3.294	ECO	3.034	BUS	3.278	GEO	3.292
ECO	3.385	SOC	3.063	MAT	3.300	ECO	3.308
ART	3.500	GOV	3.160	ECO	3.539	MAT	3.400
MAT	3.500	ART	3.200	ENG	3.546	GOV	3.532
PSY	3.690	CHM	3.300	CHM	3.633	ANT	3.727
ENG	3.750	PSY	3.362	GOV	3.723	ENG	3.727
GOV	3.787	AMS	3.417	HIS	4.050	CHM	3.750
ANT	3.818	GEO	3.458	ANT	4.136	BIO	3.947
GEO	3.917	PHY	3.500	BIO	4.417	HIS	4.100
SOC	4.000	BIO	3.689	PSY	4.603	ART	4.200
HIS	4.050	MAT	3.700	SOC	4.688	PSY	4.241
AMS	4.333	BUS	3.865	AMS	4.750	AMS	4.417

TABLE 14 SUBJECT MATTER ORIENTATION OF STUDENTS BY DIVISION, SAMPLES 1 AND 2.

	HARD – SOFT $\overline{X}$	PURE – APPLIED $\overline{X}$	NON-LIFE – LIFE $\overline{X}$	EMPIRICAL – CREATIVE $\overline{X}$	N
DIVISION I	3.698	2.942	3.570	3.791	43
DIVISION II	3.333	3.442	3.624	3.390	181
DIVISION III	3.413	3.547	3.946	3.767	149
OTHER	3.205	3.364	4.159	3.955	22

TABLE 15   FACULTY PERCEPTIONS OF SUBJECT MATTER CHARACTERISTICS CF ACADEMIC DEPARTMENTS COMPARED TO STUDENT SUBJECT MATTER ORIENTATION IN THOSE DEPARTMENTS – A SUMMARY OF t TESTS, SAMPLE 3.

DEPARTMENT	DIMENSION	t	df	ALPHA	DEPARTMENT	DIMENSION	t	df	ALPHA
AMS	H–S	1.37	--	--	GOV	H–S	4.23	39	.001
	P–A	.21	--	--		P–A	.09	--	--
	N–L	7.55	36	.001		N–L	.07	--	--
	E–C	12.33	36	.001		E–C	.28	--	--
ANT	H–S	2.55	5	.05	HIS	H–S	2.75	12	.02
	P–A	1.51	--	--		P–A	.53	--	--
	N–L	1.29	--	--		N–L	1.33	--	--
	E–C	1.37	--	--		E–C	.63	--	--
BIO	H–S	7.95	43	.001	MAT	H–S	5.07	5	.01
	P–A	3.96	55	.001		P–A	2.24	8	.05
	N–L	.68	--	--		N–L	3.58	7	.02
	E–C	5.91	54	.001		E–C	.58	--	--
BUS	H–S	2.07	80	.05	PHY	H–S	4.02	8	.01
	P–A	1.79	--	--		P–A	2.39	12	.05
	N–L	1.76	--	--		N–L	1.87	--	--
	E–C	6.04	--	--		E–C	4.27	10	.01
CHM	H–S	6.94	8	.001	PSY	H–S	4.47	31	.001
	P–A	2.84	12	.02		P–A	.72	--	--
	N–L	4.55	11	.001		N–L	4.67	49	.001
	E–C	2.90	10	.02		E–C	4.62	21	.001
DRM	H–S	1.57	--	--	SOC	H–S	1.93	--	--
	P–A	.36	--	--		P–A	.36	--	--
	N–L	.76	--	--		N–L	.76	--	--
	E–C	3.63	36	.001		E–C	3.63	36	.001
ECO	H–S	2.62	5	.05					
	P–A	.09	--	--					
	N–L	3.02	7	.02					
	E–C	1.95	--	--					
ENG	H–S	.78	--	--					
	P–A	1.34	--	--					
	N–L	.08	--	--					
	E–C	1.87	--	--					
GEO	H–S	2.49	8	.05					
	P–A	.27	--	--					
	N–L	1.21	--	--					
	E–C	3.19	5	.05					

TABLE 16   FACULTY PERCEPTIONS OF SUBJECT MATTER CHARACTERISTICS OF ACADEMIC DEPARTMENTS
COMPARED TO STUDENT SUBJECT MATTER ORIENTATION IN THOSE DEPARTMENTS - A
SUMMARY OF t TESTS, SAMPLE 4.

DEPARTMENT	DIMENSION	t	df	ALPHA	DEPARTMENT	DIMENSION	t	df	ALPHA
AMS	H-S	.08	--	--	GEO	H-S	6.22	5	.01
	P-A	2.25	36	.05		P-A	2.10	--	--
	N-L	1.39	--	--		N-L	1.00	--	--
	E-C	1.57	--	--		E-C	6.20	6	.01
ANT	H-S	1.77	--	--	GOV	H-S	2.48	35	.05
	P-A	.48	--	--		P-A	.23	--	--
	N-L	1.70	--	--		N-L	.97	--	--
	E-C	.61	--	--		E-C	4.21	38	.001
ART	H-S	1.59	--	--	HIS	H-S	.32	--	--
	P-A	.58	--	--		P-A	2.28	10	.05
	N-L	.33	--	--		N-L	.20	--	--
	E-C	1.67	--	--		E-C	1.39	--	--
BIO	H-S	8.48	43	.001	MAT	H-S	5.81	6	.01
	P-A	6.75	55	.001		P-A	2.14	--	--
	N-L	5.27	58	.001		N-L	4.12	6	.01
	E-C	7.71	54	.001		E-C	2.11	--	--
BUS	H-S	3.40	80	.01	PHY	H-S	6.72	8	.001
	P-A	3.14	81	.01		P-A	4.24	11	.01
	N-L	6.39	75	.001		N-L	3.12	9	.02
	E-C	6.88	77	.001		E-C	4.43	10	.01
CHM	H-S	4.97	10	.01	PSY	H-S	4.23	31	.001
	P-A	2.07	--	--		P-A	2.74	40	.02
	N-L	1.47	--	--		N-L	1.67	--	--
	E-C	6.53	11	.001		E-C	6.90	48	.001
CLS	H-S	1.29	--	--	RST	H-S	.78	--	--
	P-A	1.76	--	--		P-A	.62	--	--
	N-L	.68	--	--		N-L	.70	--	--
	E-C	.88	--	--		E-C	1.70	--	--
ECO	H-S	2.42	6	.05	RUS	H-S	1.95	--	--
	P-A	1.13	--	--		P-A	.50	--	--
	N-L	.65	--	--		N-L	.05	--	--
	E-C	2.8	--	--		E-C	.64	--	--
ENG	H-S	.35	--	--	SOC	H-S	.13	--	--
	P-A	.76	--	--		P-A	1.16	--	--
	N-L	1.09	--	--		N-L	.26	--	--
	E-C	.11	--	--		E-C	5.52	5	.01

TABLE 17. MEANS AND STANDARD DEVIATIONS OF FACULTY ESTIMATES OF IDEAL LEARNING STYLE IN THEIR DEPARTMENT AND STUDENT LEARNING STYLE IN THESE SAME DEPARTMENTS.

|		FACULTY			STUDENTS SAMPLE 3			SAMPLE 4		
L.S.I. SCALE	DIVISION	$\overline{X}$	SD	N	$\overline{X}$	SD	N	$\overline{X}$	SD	N
CONCRETE	I	13.60	3.36	5	15.93	2.85	30	16.76	2.42	25
EXPERIENCE	II	13.36	3.27	14	14.10	2.90	100	15.65	3.18	126
(CE)	III	9.89	4.83	18	13.86	3.11	66	15.26	2.84	38
	OTHER	----	--	--	15.50	2.68	10	13.64	3.23	11
	TOTAL	11.70	4.40	37	14.36	3.06	206	15.61	3.08	200
REFLECTIVE	I	13.00	3.32	5	12.93	3.76	30	13.32	3.51	25
OBSERVATION	II	12.71	3.81	14	12.66	3.36	100	13.71	3.53	126
(RO)	III	12.56	3.43	18	13.06	3.61	66	13.79	3.48	38
	OTHER	----	--	--	15.20	4.64	10	15.36	4.18	11
	TOTAL	12.68	3.47	37	12.95	3.58	206	13.77	3.55	200
ABSTRACT	I	21.00	3.24	5	15.90	4.36	30	15.68	3.88	25
CONCEPTUALIZATION	II	19.86	4.11	14	17.60	3.86	100	16.39	3.32	126
(AC)	III	20.33	6.19	18	17.86	3.74	66	17.08	3.74	38
	OTHER	----	--	--	16.40	4.43	10	17.09	3.24	11
	TOTAL	20.24	5.05	37	17.38	3.95	206	16.47	3.44	200
ACTIVE	I	12.40	3.78	5	15.00	3.78	30	14.68	3.78	25
EXPERIMENTATION	II	13.36	4.40	14	15.74	3.26	100	15.67	2.76	126
(AE)	III	14.28	3.40	18	15.61	3.62	66	15.32	3.07	38
	OTHER	----	--	--	13.40	3.92	10	14.82	3.49	11
	TOTAL	13.68	3.80	37	15.48	3.50	206	15.44	3.00	200
AC-CE	I	7.40	5.90	5	-0.03	5.97	30	-0.84	5.66	25
	II	5.69	6.24	14	3.50	6.09	100	0.75	5.57	126
	III	10.44	8.80	18	4.00	5.54	66	1.82	5.64	38
	OTHER	----	--	--	0.90	6.19	10	3.45	4.93	11
	TOTAL	8.10	7.67	37	3.02	6.03	206	0.91	5.60	200
AE-RO	I	-0.60	6.47	5	2.07	6.30	30	1.44	6.73	25
	II	0.56	6.85	14	3.08	5.72	100	1.94	5.38	126
	III	1.72	3.12	18	2.55	6.09	66	1.79	5.76	38
	OTHER	----	--	--	-1.80	7.44	10	-1.00	6.54	11
	TOTAL	0.95	_ 29	37	2.52	6.06	206	1.69	5.69	200

TABLE 18. FACULTY ESTIMATES OF IDEAL LEARNING STYLE IN THEIR DEPARTMENT COMPARED TO STUDENT LEARNING STYLE IN THESE SAME DEPARTMENTS GROUPED BY DIVISION, SAMPLES 3 AND 4 - A SUMMARY OF t TESTS.

L.S.I. SCALE	DIVISION	FACULTY TO SAMPLE 3			FACULTY TO SAMPLE 4		
		_t_	df	ALPHA	_t_	df	ALPHA
CONCRETE EXPERIENCE (CE)	I	1.32	--	---	3.22	5	.01
	II	.77	--	---	2.41	16	.05
	III	3.22	21	.01	4.26	23	.001
	TOTAL	1.59	--	---	5.10	43	.001
REFLECTIVE OBSERVATION (RO)	I	.05	--	---	.17	--	--
	II	.12	--	---	.91	--	--
	III	.68	--	---	1.22	--	--
	TOTAL	.44	--	---	1.74	--	--
ABSTRACT CONCEPTUALIZATION (AC)	I	2.82	7	.02	2.95	7	.05
	II	1.87	--	---	2.94	15	.01
	III	1.57	--	---	2.00	24	.05
	TOTAL	3.23	45	.01	4.30	43	.001
ACTIVE EXPERIMENTATION (AE)	I	1.29	--	---	1.18	--	--
	II	1.88	--	---	1.89	--	--
	III	1.42	--	---	1.07	--	--
	TOTAL	2.65	48	.02	2.63	45	.02
AC-CE	I	2.36	6	.05	2.76	4	.05
	II	1.27	--	---	2.93	18	.01
	III	2.87	21	.01	3.71	24	.001
	TOTAL	3.87	48	.001	5.51	47	.001
AE-RO	I	.78	--	---	.58	--	--
	II	1.35	--	---	.75	--	--
	III	.77	--	---	.05	--	---
	TOTAL	1.65	--	---	.78		---

TABLE 19. THE EFFECT OF DEPARTMENT, ACADEMIC RANK, YEARS OF EXPERIENCE, AND DIVISION ON FACULTY STRUCTURE, A SUMMARY.

STRUCTURE	DEPARTMENT	RANK	YEARS	DIVISION
CONNECTEDNESS				
TEACHING GOALS	----	--	---	----
RESEARCH GOALS	----	--	---	----
ADM. & SERV. GOALS	.05	--	---	----
SCHOLARLY PRODUCTIVITY				
TEXTS	----	--	---	.10
BOOKS	.10	--	---	.05
ARTICLES	----	.05	.005	----
PAPERS	.10	--	---	----
EXHIBITS/PERFORMANCES	.001	.001	---	.10
COMMITMENT				
PREFERENCE FOR:				
TEACHING	----	--	---	----
RESEARCH	----	.01	.025	----
SERV - DEPT.	.05	.001	---	----
SERV - COLLEGE	----	--	---	----
SERV - COMMUNITY	----	--	---	----
ACTUAL TIME SPENT ON:				
TEACHING	.10	--	---	----
RESEARCH	----	--	.05	----
SERV - DEPT	----	--	---	.10
SERV - COLLEGE	----	.05	---	----
SERV - COMMUNITY	----	.05	.05	----

FIGURE 1. FACULTY PERCEPTIONS AND STUDENT SCORES, HARD V. SOFT AND
PURE V. APPLIED.
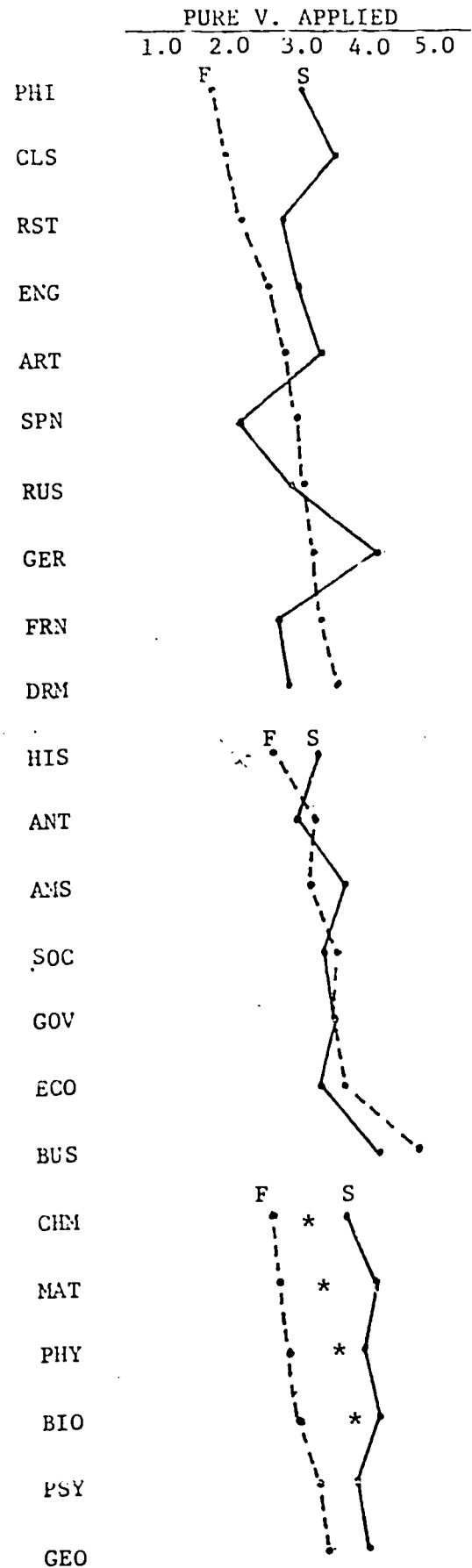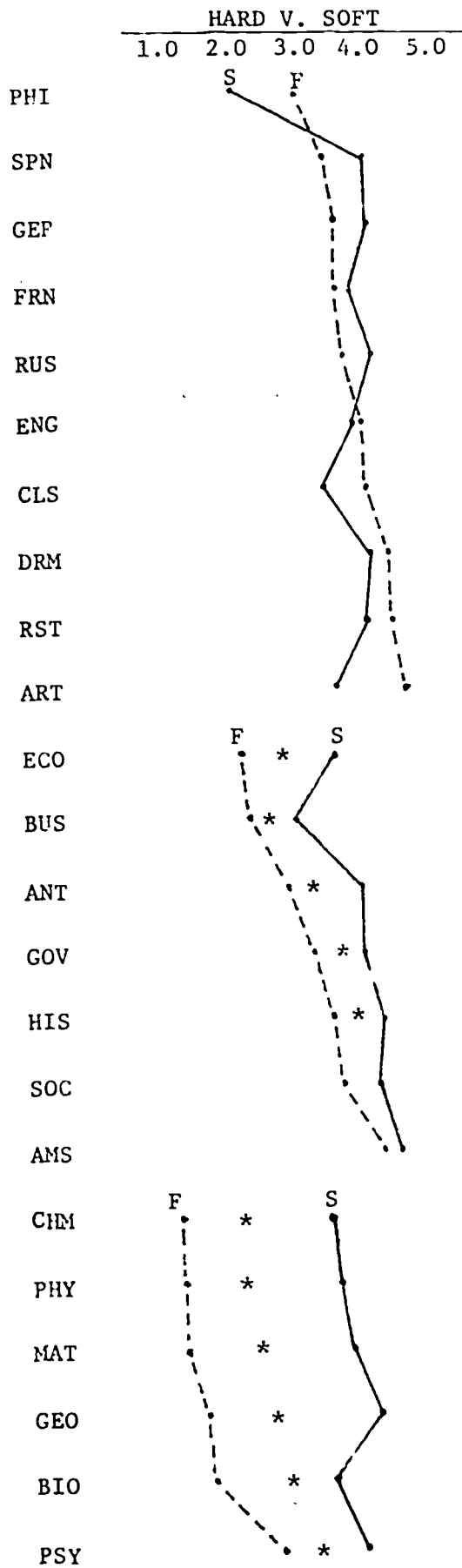
* = DIFFERENCE IS SIGNIFICANT AT .05

FIGURE 2. FACULTY PERCEPTIONS AND STUDENT SCORES, NON-LIFE V. LIFE AND
EMPIRICAL V. CREATIVE.
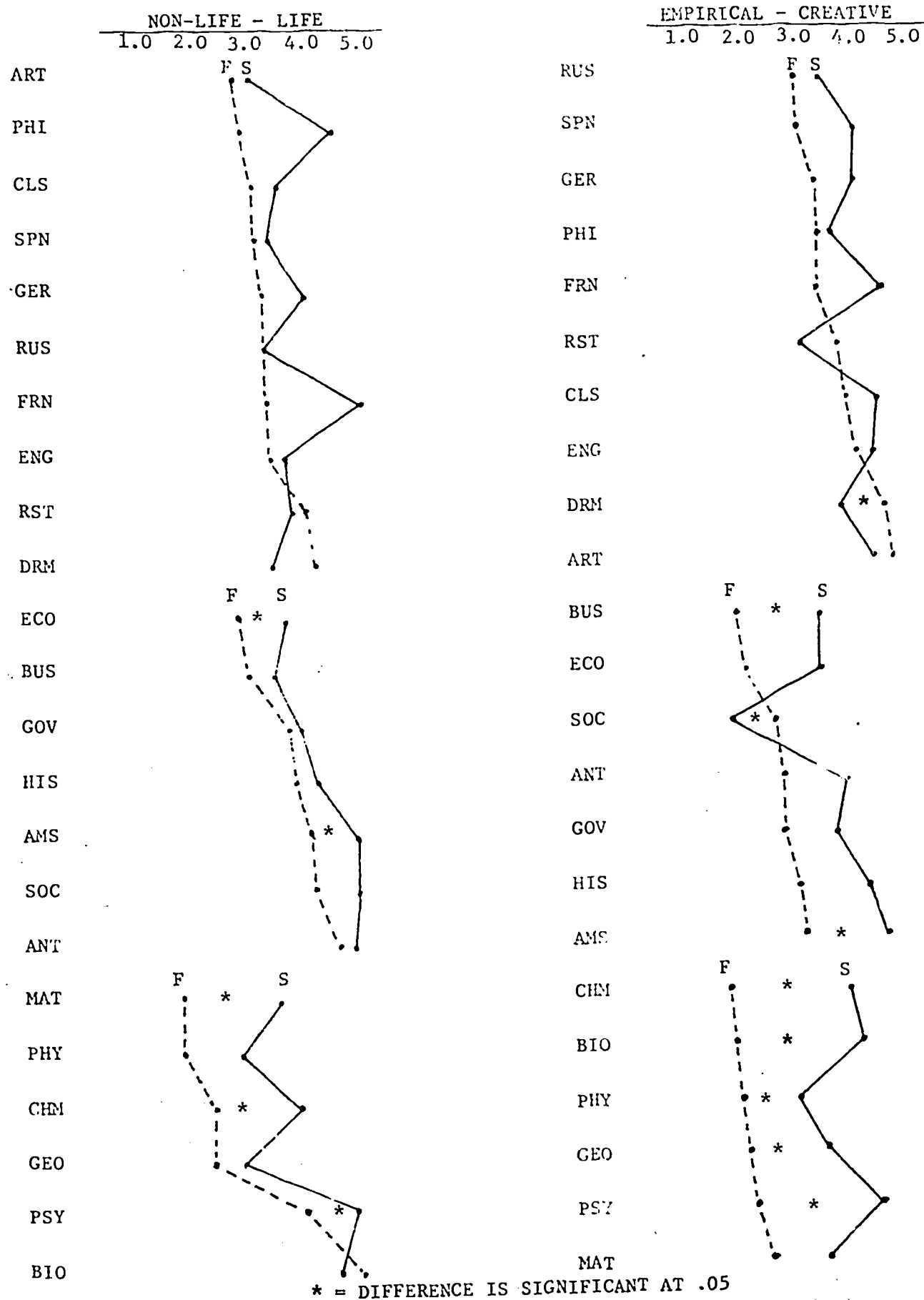

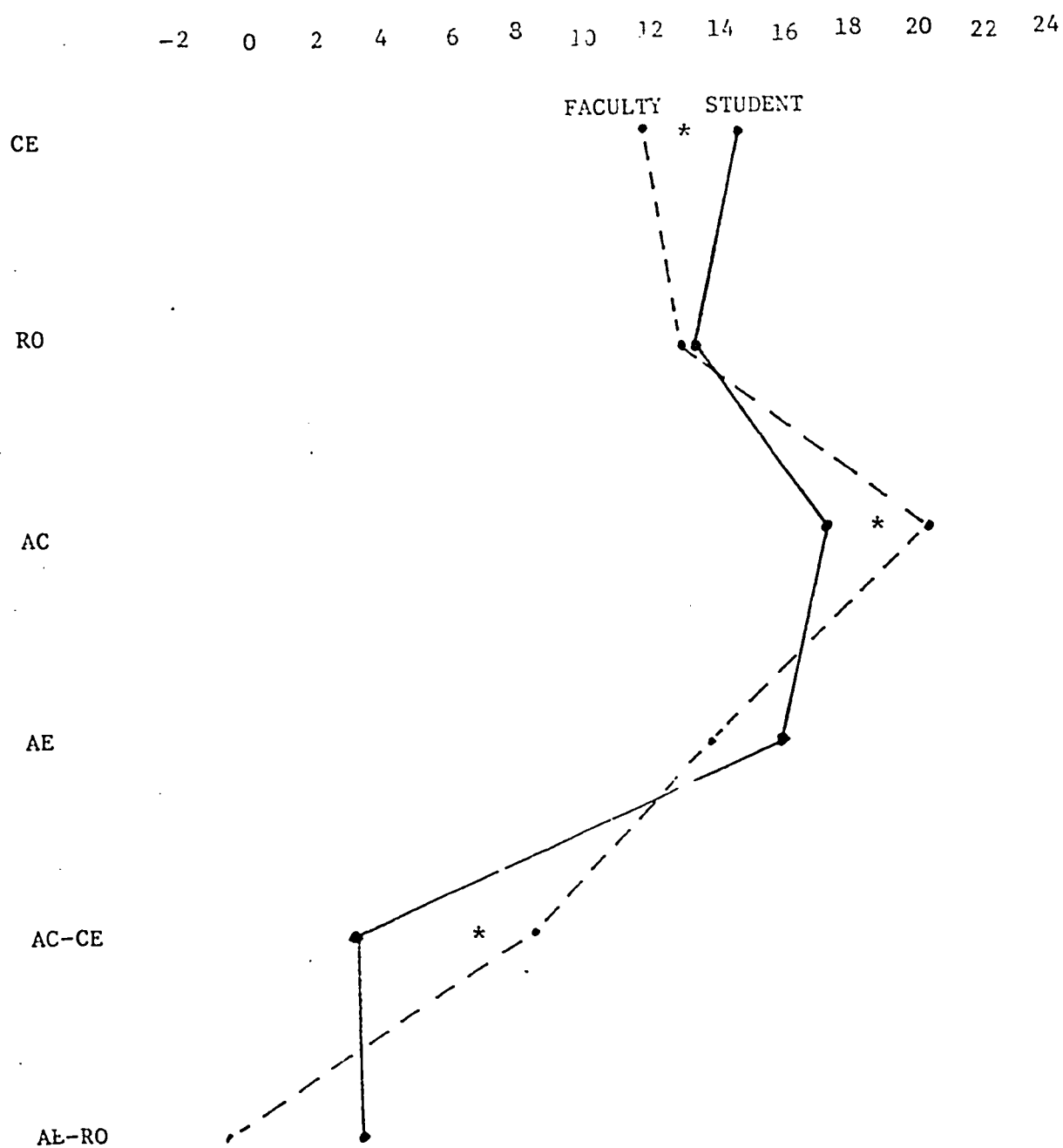* = DIFFERENCE IS SIGNIFICANT AT .05

FIGURE 3. LEARNING STYLE, FACULTY V. STUDENT

* = DIFFERENCE SIGNIFICANT AT .05

FIGURE 4. LEARNING STYLE TYPE GRID, STUDENT MAJORS